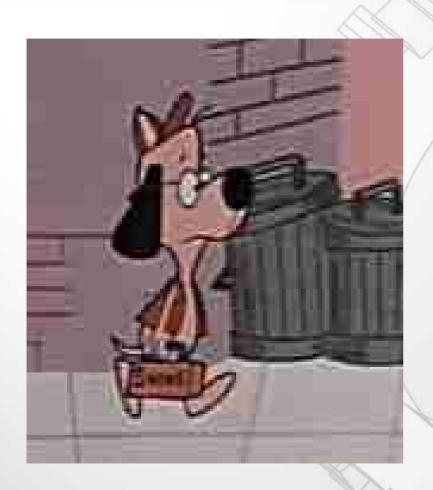


# Why CHP now? Identifying Opportunities and Realizing Benefits

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CHP Opportunities for Las Vegas Casinos
Las Vegas, Nevada
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### **The CHP Champion**







# Issues That Impact Us All: Energy, Environment, Economics

- Impact of energy on environment/ climate change
- Developing countries and growing population
- Geopolitical security impacts of fossil energy supply
- Availability and reliability of energy supply
- Critical infrastructure support
- Economic development/ growth
- Retention of business/ jobs
- Cost of electricity and natural gas
- Protection from catastrophic loss due to utility disruption



### Political Solutions for Public Problems

- Clean DG/ CHP projects bring the benefits of efficiency and clean/ renewable supply and are part of the solution to all of these issues.
- World, National, State and Local policy efforts currently underway to facilitate clean energy:
  - Utility regulation, market structure and rate design
  - Environmental regulations and markets
  - Legislated incentives for efficiency and renewables
  - Research and development
  - Market transformation activities



## Nevada Policies for Clean DG/ CHP

- Nevada Power Company Large Standby Service Rider
- Green Buildings Property Tax Abatement/ LEED
- Standardized Interconnection Standards (up to 20 MW)



# Nevada Policies for Renewably Fueled Clean Energy

- Renewable energy systems property tax exemption (NRS 361)
- Net metering AB 236 applies to renewables up to 150 kW
- Nevada Energy Portfolio Standard includes waste heat-first CHP



#### Coordinated Policies Enable Clean Energy

- For best results, policies should be harmonized/ coordinated across various government/ regulatory entities to achieve common policy goals.
- These policies will only produce results if barriers are cleared, markets for clean energy are enabled and projects are successfully deployed at the site level.



### Bringing It Down To Earth

- The site/ investor will require quantifiable benefits (\$) and manageable risks to justify private investment. Where this occurs, CHP is sustainable, bringing economic value to the site while providing coincident societal and environmental benefits.
- But, not all sites are good for CHP. CHP must fit technically, operationally and economically into the site, so....



### **Identifying Opportunity**

- Is CHP even worth considering?
  - Are there any operational savings at all?
  - Basic CHP Economics spark spread
- Is CHP potentially compelling?
  - Are there other values or cost offsets which will positively affect the economics of the project?
  - Needs Assessment



# Is CHP Worth Considering? Cost to Operate Example

| Operating Assumptions  |                                    |
|--|------------------------------------|
| CHP Electric Efficiency, %   | 34.0%                              |
| CHP Power to Heat Ratio  | 0.9                                |
| Displaced Thermal Efficiency   | 80.0%                              |
| Thermal Utilization, %   | 90.0%                              |
| Incremental CHP O&M Costs, \$/kWh  | \$0.0100                           |
| CHP Fuel Cost, \$/MMBtu  | \$8.00                             |
| Displaced Thermal Fuel Cost, \$/kWh  | \$8.00                             |
| Operating Cost to Generate CHP Fuel Costs, \$/kWh Thermal Credit, \$/kWh Incremental O&M, \$/kWh | \$0.0803<br>(\$0.0341)<br>\$0.0100 |
| Operating Costs to Generate Power, \$/kWh  | \$0.0562                           |



#### Is Your Casino a Good Candidate for CHP?

- Do you pay more than \$.07/ kWh for electricity?
- Are you concerned about high or rising utility costs?
- Are you considering adding or replacing backup generators?
- Does your resort or casino have a central chilled water system?
- Are you planning an expansion, new construction or major retrofit of your resort or casino's HVAC system?
- Are you interested in reducing the environmental impact of your hotel or casino's operations?



#### For More Information

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